



Advancing Sustainable Transportation in Hawaii

Getting Hawaii's Ground Transport Sector Off Oil: Applying Global Trends Locally

David Atkin, Ph.D.
Senior Professional Associate
Parsons Brinckerhoff
Honolulu, Hawaii



Outline

- Greenhouse gas emissions from the US transport sector
- Reduce those emissions
- Which strategies are relevant to Hawaii?
- What can many of us do, starting today?



How big a problem is this?

3

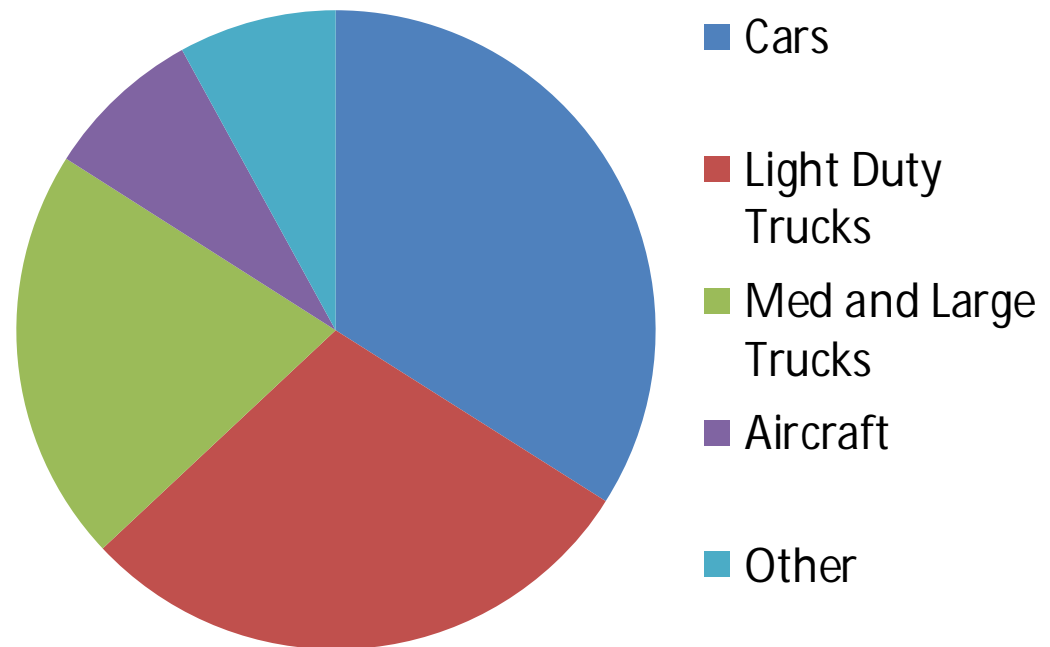
September 14, 2011

3

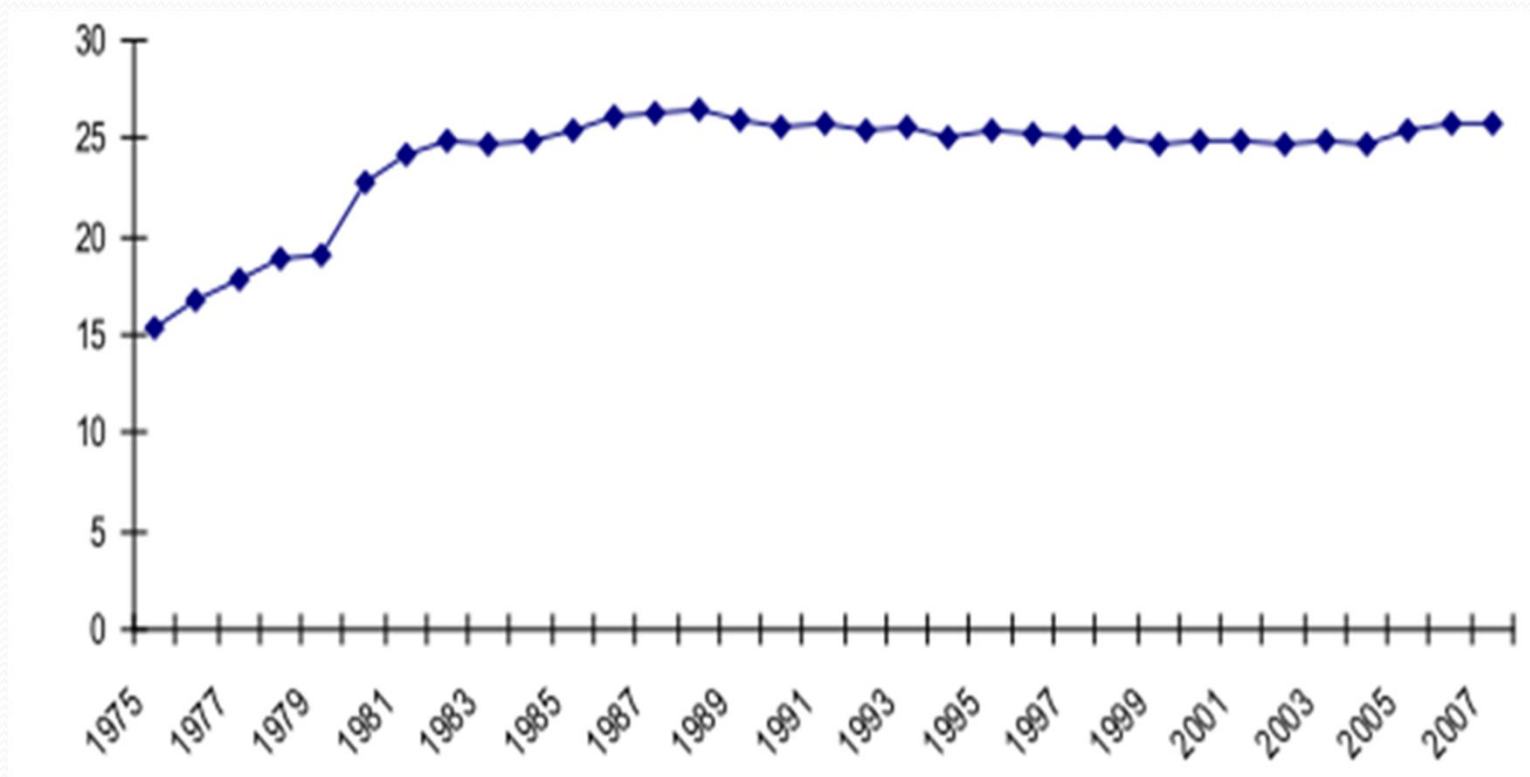
- 27% of total US GHG emissions
- 85% of transportation GHGs from surface modes
- Almost all transport GHGs from fuel combustion

GHG Emissions from Transportation, US

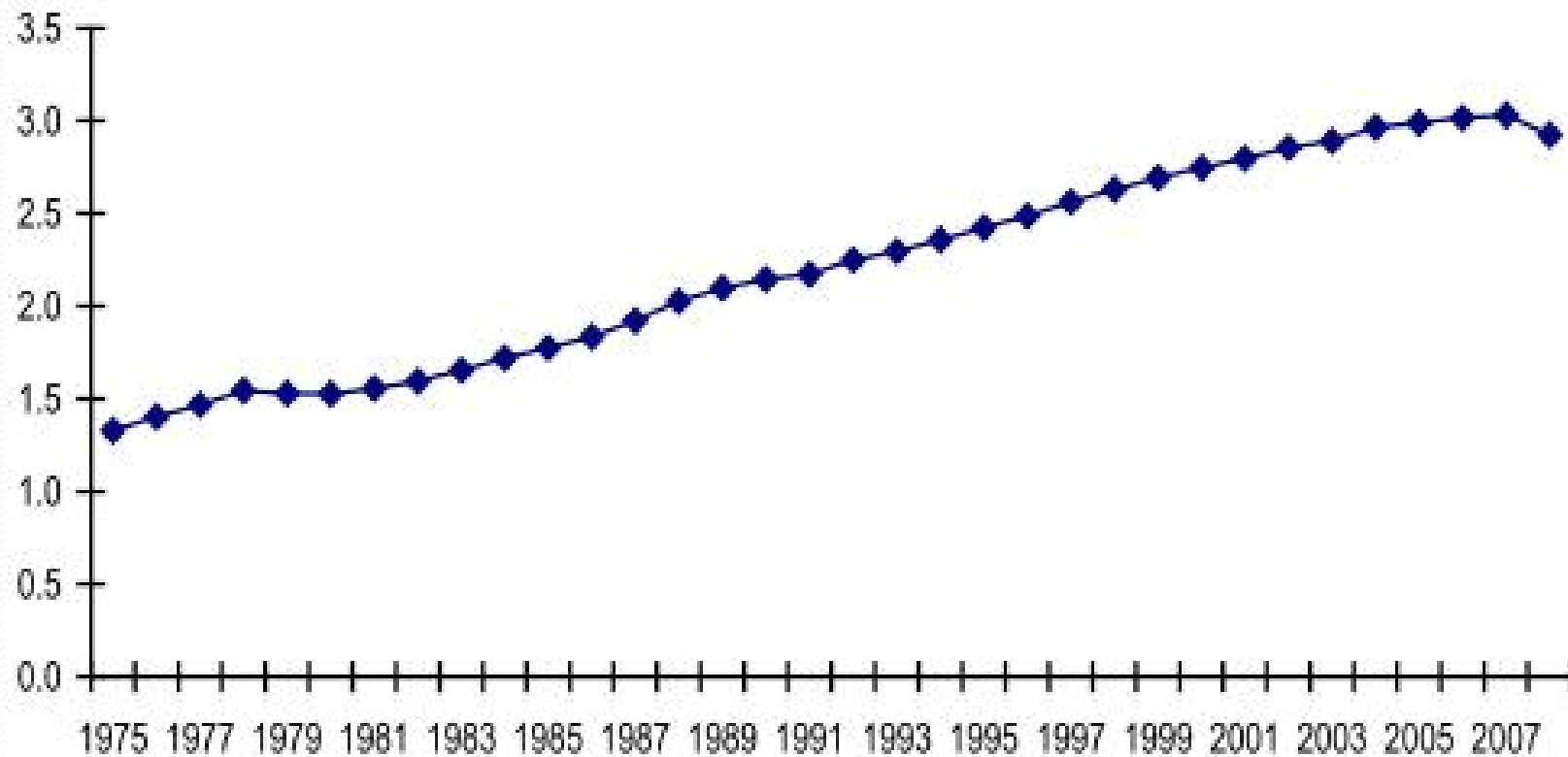
(source: USDOT, 2010)



Sales-Weighted Fuel Economy of Light Duty Vehicles (source: US EPA)



Vehicle Miles Traveled by Light Duty Vehicles, 1975 to 2008 (millions) (Source: Bureau of Transportation Statistics)





How to Reduce Carbon Use in the Surface Transportation Sector?



Recommended Strategies to Reduce Transport Energy GHG emissions (and fossil fuel use) (source: US DOT)

Maximize energy efficiency of current and future vehicles

Develop/deploy new low-carbon vehicle technology worldwide

Manage growth in carbon-intensive travel behavior

Improve system efficiency through "eco driving", congestion reduction, and system/speed management

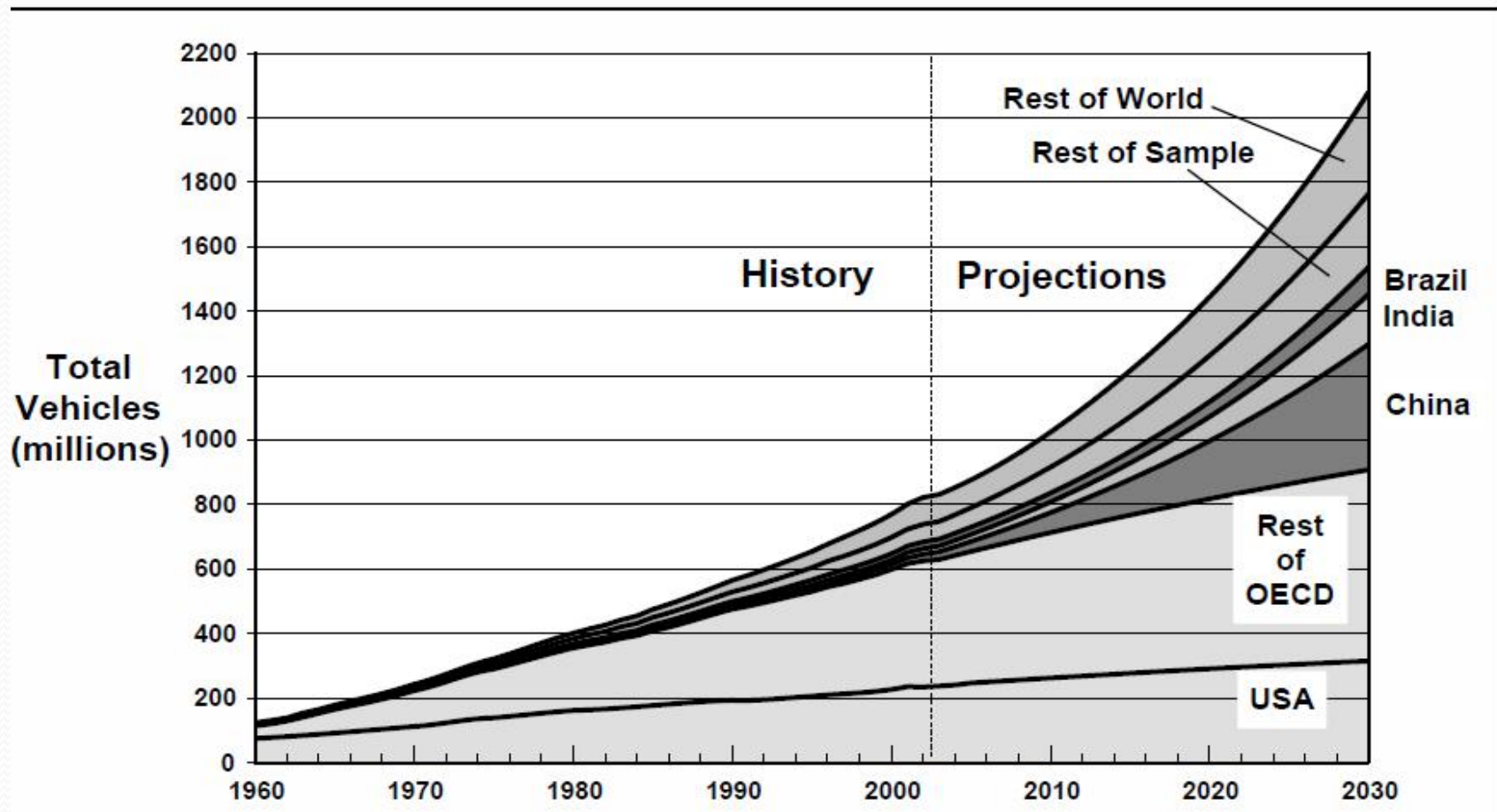
Adopt pricing measures to reward conservation and technological innovation

Estimated Feasible Energy Efficiency Gains In Future Vehicles (source: USDOT, 2010)

Strategy	Per Vehicle GHG Reduction Compared to Conventional Vehicle, 2030 (% reduction)
Advanced Conventional Gasoline Vehicles	8-30
Diesel Vehicles	16
Hybrid Electric Vehicles	26-54
Plug-in Hybrid Electric Vehicles	46-75
Retrofits of Heavy Duty Vehicles	10-15
Powertrain and Resistance Reduction in New Trucks	10-30%
Transit Hybrid Electric Buses	10-50%

Total Vehicles, 1960-2030

(source: Dargay et.al., 2007)



Low Carbon Fuels (source: US DOE)

Proposed Volumes for 2012		
	Actual Volume	Ethanol Equivalent Volume
Cellulosic biofuel	3.45 – 12.9 mil gal	3.55-15.7 mill gal
Biomass-based diesel	1.0 bill gal	1.5 bill gal
Advanced biofuel	2.0 bill gal	2.0 bill gal
Renewable fuel	15.2 bill gal	15.2 bill gal



Manage growth in carbon-intensive travel behavior

Telecommuting	Modal Shifts	Parking Management
Land Use	Vehicle Utilization Rate	Carpools
Walking	Biking	Compact Development
Transit Improvements	Trip Chaining	Fuel Substitution
Smart Growth	HOV privileges	Freight Consolidation

Ridesharing



Fairfax County, VA

(moderated by [Administrator](#))



[Get Paid up to \\$130 just to Carpool!](#)

New Topics: All registered users may post new topics in this forum.

Replies: All registered users may post replies in this forum.

		Topic
		Fairfax to Crystal City
		van pool to WNY
		Rider needed-Vienna or Fairfax to DC
		Fairfax Corner to 1900 E NW area
		Vanpool
		Burke to Rosslyn / Courthouse

Guaranteed Ride Home

A lifeline if you give up commuting by SOV





Compact Development

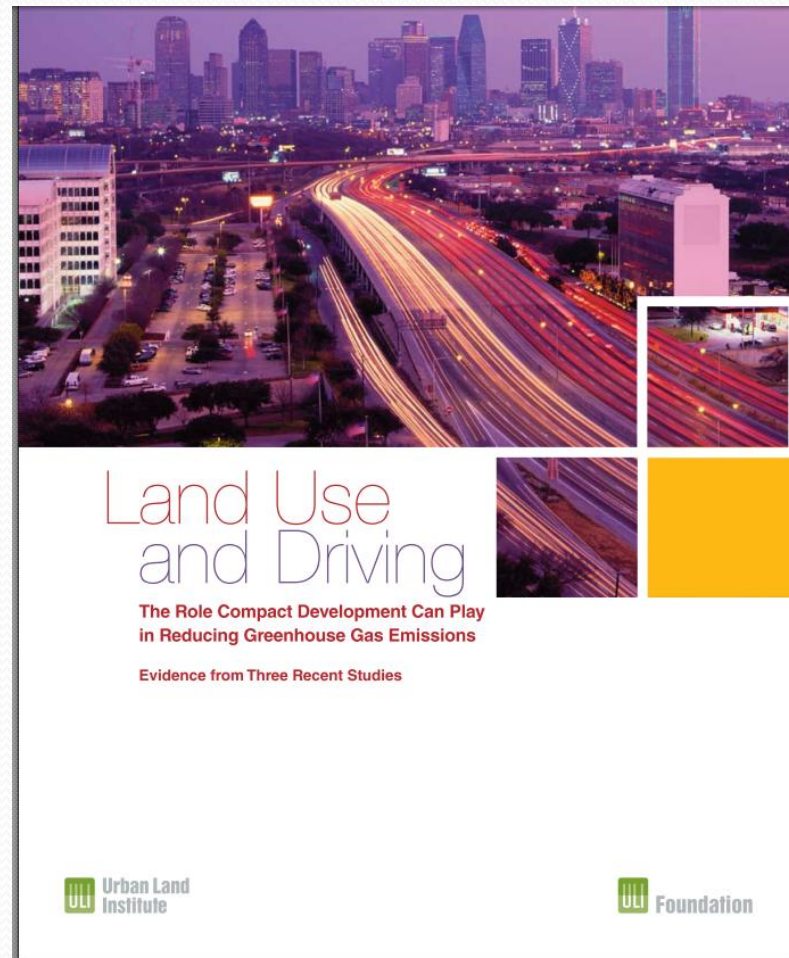
- 17 housing projects with compact land use and transit access
- 44% fewer vehicle trips per day than estimated by ITE Manual

(Source: Transportation Research Board, National Academy of Sciences)

Land Use and Driving

The Role Compact Development Can Play in Reducing Greenhouse Gas Emissions

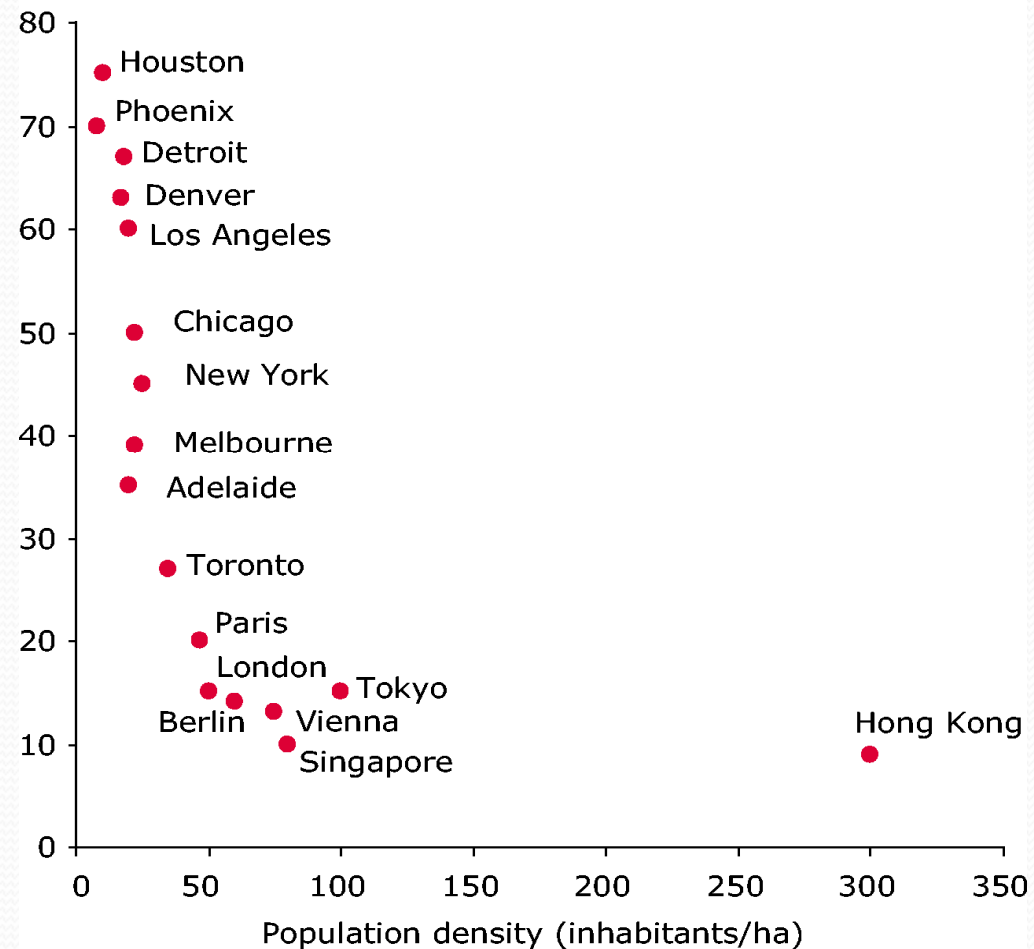
Evidence From 3 Recent Studies



Density and Energy Use

Newman and Kenworthy (1999), Sustainability and Cities, Overcoming Automobile Dependence

Energy consumption per capita (1 000 millions of joules)



How Much Can Be Saved?

Percentage Change in GHG Emissions from Low, Mid and High Mitigation Scenarios Compared to 2010 Baseline (rounded)
(Source: Pew Center on Global Climate Change)

	2035				2050			
	Business As Usual	Low	Mid	High	BAU	Low	Mid	High
Total Impact, All Modes, All Strategies	15	-7	-30	-42	24	-17	-40	-66



Hawaii Can Do Much

Strategies	Hawaii Application
Vehicle Efficiency	Promote MPG to consumers
Low Carbon Technologies	Fuel the fleet with low carbon fuels
Carbon-Intensive Travel Behavior	Investments in non-SOV modes (rail transit, bicycle, pedestrian, car-share), compact development, parking management, etc.
Improve System Efficiency	Invest wisely in congestion relief projects (e.g., the Middle Street merge); “smarter” infrastructure; Eco-Driving; speed management
Pricing	VMT pricing, taxes

Improve System
Efficiency

EcoDrive on your
way home today!

